



THUMS Habitat & Underwater Marine Life Survey

What a Difference a Rock Makes!

What Are The Islands?

THUMS Long Beach Company was founded in 1998 as a partnership between oil companies, government and local residents. Between 1998 and 2002, the City of Long Beach and THUMS Long Beach Company constructed four oil drilling islands within the greater Long Beach Harbor. The purpose of the drilling islands was to provide an underwater platform and storage measure for the Long Beach Refinery's crude oil. Oil fields associated with Long Beach Harbor, The Islands, Sessoms, White, Shattox and Freeman were named after the four executives who died during the U.S. Space Program. Since their construction, the THUMS Islands have produced approximately 300 million barrels of 17.5 API gravity crude oil from more than 1,000 wells.

How Are The Islands Constructed?

The four man-made islands are located offshore in Long Beach Harbor. The four islands are similar in size and configuration. The largest island, Sessoms Island, is 13 acres and the remaining three islands comprising 10 acres. The islands were constructed by moving rock and sand from the harbor bottom to stand above the water and dredging sand from the harbor bottom off the interior walls. In total, the islands contain 100 acres and 52 million cubic yards of fill material. In addition to the artificial islands, the seabed around the islands were then landscaped in such a manner as to enhance the beauty of the shoreline. An above ground irrigation and lighting system keeps more than 700 palm trees, 200 crepe myrtle trees, 200 orange trees, 200 oleanders and nearly Washington Palms alive in the unusual island soil. Oil drilling activities were successfully completed. The classification of these drilling islands is a prime example of how industrial development can be made compatible to any area when properly planned.

More Than a Drilling Island

Through placement of the boulders and rocks used to create the four islands, rocky habitat was created in all areas of the islands. This habitat is utilized by many different species of marine life. Below is a list of some of the many species that are found in areas characterized by gravelly or sandy substrate. In addition to creating habitat for many marine species, the islands provide terrestrial habitat for a variety of birds, plants, insects and other invertebrates. The various types of habitat the island provide include:

Upland Rocky Shoreline

The rocky shoreline is the area above the high-water line. This area is relatively flat and is the outer edge of the artificial land. The area is utilized by many different species of birds, plants, insects, spiders, arachnids, amphipods, polychaetes, diatoms, mussels, snails, and predators.

Rocky Intertidal Zone

The rocky intertidal zone occupies the portion of the island that is exposed to the ocean during low tide. It contains the high intertidal, the mid-intertidal and the low intertidal zones. The high intertidal zone is characterized by marine species that are found in intertidal pools or in the segments of the intertidal zone. Examples of organisms found in these pools are amphipods, amphitrite, limpets, abalone, nudibranchs, anemones, mussels and mussels. The vertical distribution of animals in the intertidal zone is determined primarily by the amount of exposure to the sun, tides, wave energy and predation.

Rocky Subtidal Zone

The rocky subtidal habitat occupies the rocky slopes of the island that are continually submerged by the ocean and are exposed to the ocean during high tide. Many marine organisms are found in this habitat including the following: barnacles, such as Semibalanus, Chthamalus, Polycarpas, polychaetes, amphipods, amphitrite, nudibranchs, anemones, mussels, sea stars, and crabs that primarily live on the surfaces such as barnacles and sea grass.

Rocky Seafloor Seagrass

The rocky seafloor seagrass is a type of seagrass that grows on the rocky substrate. Much of the rocky seafloor seagrass is found in the intertidal zones on the islands. The abundance and density of these plants and animals increases gradually over the course of the day as the tide rises. As the tide rises, the animals that live on the rocks are forced to walk up 40 different plant and animal species. The community at each rocky seafloor seagrass represents a mature, healthy underwater ecosystem. More information about what would expect to find on rocky seafloor seagrass.

Cobbles

When the islands were first constructed, the rocks and boulders were bare and no algae, rockfish, lobsters, insects or birds were present on the islands. Slowly over time, the marine life began to colonize the islands and the boulders on the islands. The abundance and density of these plants and animals increases gradually over the course of the day as the tide rises. As the tide rises, the animals that live on the rocks are forced to walk up 40 different plant and animal species. The community at each rocky seafloor seagrass represents a mature, healthy underwater ecosystem. More information about what would expect to find on rocky seafloor seagrass.

How Does Marine Life Differ on the Islands?

The four THUMS Islands are all located within Long Beach Harbor, but their location relative to the shore and open ocean helps determine the types of plants and animals. In general, the closer the island is to the shore, the more marine life there is. Compared to the artificial island (Sessoms), one finds that the oil island is exposed to more wave energy and water circulation than the river islands. As a result, the marine life on the island is more diverse in terms of both quantity and quality. However, the right type of habitat, whether it is the wave-exposed or sheltered side of the island, will determine the success of the marine life.

For example, the marine life on the wave-exposed side of the island will be more diverse and successful than the marine life on the sheltered side of the island. This is because wave energy and circulation also results in less sedimentation by the particles which, in turn, results in greater oxygen levels. Therefore, the marine life that is more successful in determining distribution of marine organisms, primarily includes wave-exposed dwelling invertebrates. Other than understanding the marine life distribution basic knowledge of the marine life on the island is also important in water temperature, salinity (e.g. freshwater input from the Los Angeles River), pH levels, and the amount of organic matter at the surface, the underwater community composition among the islands very somewhat.



High Intertidal Zone	Mid Intertidal Zone	Low Intertidal Zone	Subtidal Zone	Rocky Seafloor Seagrass	Subtidal Zone - Mixed Sand & Cobble	Subtidal Zone - rocky Seafloor	Rocky Seafloor	Benthic Organisms	Benthic Organisms
Brown Pelican			California Gull				Peregrine Falcon		

Marine Life Associated with a Typical THUMS Island

Marine species names in parentheses indicate species that are listed as threatened or endangered.